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MASCARA BRUSH AND PROCESS FOR ITS PRODUCTION
[Mascara-Buerstchen und Verfahren zu seiner Herstellung]

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The invention relates to a mascara brush with a handle and an application part located on its front end, in the form of a central carrier from which radial projections emerge. In known mascara brushes of the above described type, aside from embodiments in which the carrier consists of wires which have been twisted together and between which the bristles are held, in particular embodiments have become known in which thin, elongated projections, so-called tentacles, proceed from a plastic carrier. In order to be able to mass produce mascara brushes with uniform quality and comparative low production costs, which still have their advantageous application properties even when used for a longer time, it has already been suggested that the brush be made such that a tubular piece with tentacles molded on be mounted as a prefabricated component with a clamp seat on the handle.

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These known embodiments however have the disadvantage that only a relatively limited amount of liquid, pasty or powdered coating material clings to the fine tentacles, or for overly large apportioning of the coating agent there is the danger of dripping down.

To avoid these difficulties, as claimed in the invention it is provided that the outside surface of the carrier and/or the projections (tentacles) are provided with grooves or ribs for retaining and apportioning the liquid or pasty coating agent.

By providing these grooves or ribs which can run both in the lengthwise direction of the tubular piece and of the tentacles, but which are to be made preferably as peripheral cross grooves or cross ribs, since in this way when applied the make-up or other coating agent

* Numbers in the margin indicate pagination in the foreign text.

can be spread especially effectively from the apportioning grooves or ribs, the problem of uniform apportioning of the coating agent can be satisfactorily solved very easily and for all possible coating agents. Matched to the respective degree of viscosity of the coating agent, the number and execution of the ribs or grooves can be varied, of course the height of the ribs itself remaining a multiple behind the length of the tentacles even when the ribs are arranged on the outside jacket of the tubular piece.

In addition to the possibility of extrusion-coating the handle with the tubular piece and tentacles, then in the injection mold there being the corresponding indentations or projections for the grooves or ribs, in another embodiment of the invention it can also be provided that the handle be equipped with grooves or ribs which appear on the outside of the tubular piece which has been pressed onto the handle. This execution obviates the necessity of these apportioning grooves or ribs in the tubular piece with the tentacles at all, but a smooth tubular piece can be used. The apportioning grooves or ribs appear only after pulling onto the handle, the grooves or ribs of the handle being used at the same time for the fixed anchoring of the tubular piece. In the case of the the grooves or ribs being arranged on the tentacles, of course this possibility no longer exists. In this case the grooves or ribs in the injection molding of the tubular piece with the tentacles must be molded on in the mold, removal from the mold even with the arrangement of cross grooves or cross ribs not posing any problems, since on the one hand the height and depth of the ribs or grooves respectively is only relatively small and moreover the plastic in most cases is very elastic in order to yield a soft brush whose tentacles

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cannot comprises any danger of injury to the user.

Finally, it is still within the framework of the invention to make the tubular piece closed on its face side in order in this way to additionally avoid any danger of injury on the tip of the handle which consists usually of essentially harder material.

The mascara brushes as claimed in the invention do have very good application properties, but production of these brushes is still always relatively complex and fault-susceptible, since the removal of the fine tentacles from the mold, especially when they are to be arranged distributed around the central body and thus cannot lie in the mold release plane, entails the danger that they will stick when the mold is opened and will thus be torn off. The mold must then first be readied again before further operation is possible. Moreover these fine tentacles - even when using additional grooves or ribs as claimed in the invention - cannot hold especially low-viscosity coating agents or powder coating agents in many cases to the desired degree and finally there is the danger than when the mascara brush is turned to apply the cosmetic to the eyelids, the tentacles which have been bent and which become free again when turning shoot forward and thus the cosmetic is sprayed away.

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To remedy these problems, in a development of the invention it can be provided that the radial projections are preferably peripheral disks which are perpendicular to the carrier axis.

This means that the ribs which are located on the outside surface of the carrier and which are provided in the basic idea of this invention are enlarged radially to these disks and then the fine tentacle are completely eliminated. Conversely it could also be stated

that a row of tentacles located in one axial plane is combined into a peripheral disk.

This replacement of the existing thin, thread-like tentacle by peripheral disks as claimed in the invention on the one hand has the advantage that the application parts could consist of any material, optionally even metal, although of course in the execution as claimed in the invention plastic is the preferred material. This disks can retain between themselves thin liquid or powdered cosmetics to a much better degree than the thread-like tentacles used to date, in addition when the application part is turning around its axis for purposes of stripping the cosmetic off onto the eyelids the bending-back of the tentacles addressed above and their shooting forward cannot take place with the peripheral disks.

In one development of the invention the disks can be provided with at least one narrow radial indentation in order to achieve a connection of the respective receiving spaces between two disks to the adjacent receiving spaces, so that the cosmetic can be distributed over the length of the brush and irregularities in the acceptance of the cosmetics or its consumption can be equalized.

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To prevent a thinly viscous medium from running out too vigorously through the narrow channel which has been formed in this way when the mascara brush is pulled out of the storage container when the indentations are aligned, in a development of the invention it can be provided that the indentations are arranged offset to one another from disk to disk, an offset of 180° being especially favorable since it can be produced very easily using a workpiece which consists only of two mold parts. Here the disk shape of the projections as claimed in the

invention obviously also avoids the difficulty of sticking in the corresponding mold recesses, as it the case for thin, thread-like tentacles.

The diameters of the preferably round disks can decrease to the ends according to the tapering execution of conventional mascara brushes, and the last disk or disks on each end can be advantageously executed without the indicated indentations in order to prevent the cosmetic from flowing away from the top or toward the handle of the mascara brush.

In addition to the integral connection of the carrier to the handle, i.e., preferably an embodiment in which the disks and the handle are injected as an integral component in one step, the application part can also be a separately produced component which is subsequently connected to the handle. This can be done either by the carrier /6 having a plug-type peg for attachment to the front end of the handle, or by the central carrier being made as a plastic tubular piece which can be attached to the handle, as is known.

The mascara brush as claimed in the invention, in which the radial projections are preferably peripheral, thin plastic disks perpendicular to the carrier axis, can ultimately be improved in the execution of the invention, especially in its application behavior, by the application part being an integral part of foam or soft plastic with machined, wedge-shaped grooves.

In contrast to the above described execution of the mascara brush as claimed in the invention in which the peripheral disks were thin plate-shaped disks spaced apart from one another, the disks according

to this development are made discus-shaped and are separated from one another, not by a rectangular groove, but by a wedge-shaped groove which runs in a line in the middle. This wedge-shaped groove in conjunction with the execution of the application part from foam or soft plastic both for powdered and also very thin-liquid coating substances, again entails improvements relative to the versions of the mascara brush as claimed in the invention, which were described above.

The wedge-shaped grooves in one development of the invention will be made such that the disk edges form narrow edges so that the disks can easily fit between the individual eyelashes in order to release to the eyelashes the coating agents adhering to the disks. The wedge-shaped grooves can either run parallel to one another, or also can hang together helically.

The resulting disks between which the indicated wedge-shaped grooves are located need not be circular on the periphery, i.e., the jacket of these disks need not constitute a cylinder. This is one preferred base shape, but for special applications it can also be favorable to use a nonround cross section, for example in the form of an ellipse which emerges additionally on the ends of the major semi-axis in an acute angle. Moreover other polygonal cross sections could also be provided or even cross sections which derive from a circle from which segments are cut out which in any case should not extend as far as the center point. /7

To produce the mascara brush as claimed in the invention, in one development of the invention it can be provided that the handles are foam-coated directly in the corresponding mold in which the wedge-shaped grooves are machined at the same time. But instead, a production

process can also be used in which blanks of foam or soft plastic are deep frozen or the wedge-shaped grooves are made by means of cutting tools. This special production process allows extremely simple production of mascara brushes of soft plastic or foam which are optimum in their application behavior. By deep-freezing the blanks they become so stiff that cutting can take place without difficulty. Here it has been found that this two-stage machining with cutting of the wedge-shaped grooves by sinking is altogether no more complex than injection molding of conventional mascara brush application parts, whether with tentacle-like projections, or with peripheral disks. Likewise the application parts as claimed in the invention compared to all existing arrangements, especially for problematic coating substances, yield favorable application properties.

In the indicated embodiments with a nonround cross sections, /8
the special cross sectional shape can of course also be achieved in conjunction with cutting of the deep-frozen blanks, by the corresponding lengthwise grooves or segments being milled before the peripheral wedge-shaped grooves are machined. In this connection, a version can of course also be chosen in which first the peripheral grooves are made in the cylindrical blank and then a series of spaced lengthwise grooves are made so that only the parts which project in the manner of stars are provided with grooves, in any case when the lengthwise segments or other flattened areas are radially deeper than the depth of the wedge-shaped grooves.

Other advantages, features and details of the invention will become apparent from the following description of some embodiments and using the drawings.

Figure 1 shows a view of a mascara brush as claimed in the invention,

Figure 2 shows an enlarged lengthwise section through the head of the brush, the tentacles which are made differently on the left and right being shown,

Figures 3-5 show partial sections according to Figure 2 through the mascara brush with apportioning grooves or ribs made differently on the outside of the tubular piece,

Figure 6 shows a view of a handle to which the tubular piece with the tentacles is attached by insertion and extrusion coating in an injection mold,

Figure 7 shows a view of a mascara brush as claimed in the invention with disk-shaped projections,

Figure 8 shows an enlarged perspective partial view of the application part as shown in Figure 7 with aligned indentations of the disks, /9

Figure 9 shows a detailed view which corresponds to Figure 8 and in which the indentations are arranged offset against one another from disk to disk,

Figure 10 shows an enlarged, partial lengthwise section through the application part of the mascara brush as shown in Figures 7 to 9, in which the carrier constitutes a tubular piece which can be attached to the handle,

Figure 11 shows a view of the front part of a modified mascara brush with an application part of foam or soft plastic with wedge-shaped grooves which run parallel to one another,

Figure 12 shows a view of one modified embodiment with wedge-shaped grooves which hang together helically,

Figure 13 shows a lengthwise section through the arrangement as shown in Figure 11, and

Figure 14 shows a cross section through one embodiment of a mascara brush as claimed in one of Claims 11 to 13 with a nonround cross section.

On the tapered front section 1 of the handle 2, a plastic tubular piece 3 is attached which is additionally closed on the end side in the embodiment as shown in Figures 1 to 6 and on which tentacles 4 are molded which project radially to the outside. These tentacles 4, as indicated in Figure 2 on the left side, can be provided with lengthwise grooves 5, or as is indicated in Figure 2 on the right side, with cross grooves which allow better and mainly also more exact apportioning of the liquid or pasty coating agent. Especially for relatively thin-liquid coating agents is this additional apportioning extremely useful. Instead of lengthwise grooves 5 or cross grooves 6, of course there can also be lengthwise ribs and cross ribs on the tentacles. In addition to these apportioning grooves or ribs of the tentacles, optionally also instead of the grooves or ribs of the tentacles, on the outside of the tubular piece 3 apportioning grooves or ribs will be arranged, as is indicated in Figures 3-5, in the form of peripheral cross ribs or grooves. While the peripheral cross ribs 7 or cross grooves 9 are molded directly on the tubular piece 3 itself in the arrangements as shown in Figures 3 and 4, the cross ribs 7' in the arrangement as shown in Figure 5 are formed by the initially cylindrical tubular piece 3 being pressed onto the head section 1 of the handle which is provided

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with peripheral ribs 9 which become noticeable as apportioning ribs 7' of the outside of the tubular piece 3.

Figure 6 shows a handle 2 whose front section 1 is provided with knobs 10 which project in different directions. The length of the knobs 10 corresponds to the wall thickness of the tubular piece 3 which can be applied by extrusion coating; this results in that the knobs when inserted into the mold adjoin its outside wall with centering.

In the arrangement as shown in Figure 7, the application part 104 is attached to the tapered front section 101 of the handle 102 which bears on the back end the sealing plug 103 of the storage container which is not shown, which plug is used as a grip, and the application part consists of a central carrier 106 and disks 106 which are spaced axially against one another and which are arranged perpendicular to the lengthwise axis of the carrier. The disks whose diameters decrease toward the two ends can be provided with narrow indentations 107 which can be arranged either aligned, as shown in Figure 8, or offset against one another, as in Figure 9, so that the communicating connection of the chambers which is formed by them between two disks of cosmetic at a time cannot lead to rapid runoff of a liquid cosmetic even when the application part is held hanging down. The central carrier, as indicated in Figures 7 and 8, can be a tubular piece with a peg which can be inserted into a corresponding recess of the front end of the handle 102, and the plug connection can optionally be locked in addition by bonding or cementing. Instead, it is however also possible (compare Figure 10) to make the carrier 105' as a tubular piece which can be attached to the front end of the handle 102, for example in such a way that the prefabricated application part 105', 106' is pushed over

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the handle 102, clamping it.

In the embodiments as shown in Figures 11 to 14, an application part 202, preferably of foam, is either slipped onto the front end of the handle 201 (Figure 13), or in the case of the likewise possible execution of soft plastic, is also optionally directly molded on. The application part 202 is provided with wedge-shaped grooves 203 which in the case of the arrangement as shown in Figures 11 and 13 lie in parallel planes, while in the arrangement as shown in Figure 2 they hang together helically. These wedge-shaped grooves 203 form disc-shaped disks 204 which emerge to the outside in a narrow edge 205. In the production of the application parts 202 a blank is used, as is delineated in Figure 13 by the dot-dash lines 206. This blank is deep frozen before or after it is slipped onto the handle 201. In the deep frozen state then the wedge-shaped grooves 203 can be machined by means of cutting tools.

Figure 14 shows an enlarged cross section through another embodiment of a mascara brush as claimed in the invention. Here the application part is not round in cross section, i.e., a cylindrical blank is not used, but more or less a blank whose cross section is star-shaped. Then the wedge-shaped grooves are made in them in the illustrated embodiment. These configurations can obviously be more easily produced in the course of extrusion coating of the handle than by cutting, since in any case more complicated tracking of the tool according to the external shape of the star is necessary.

The invention is not limited to the illustrated embodiments. In addition to other cross sectional shapes of the application part, it would also be possible to proceed such that first, as in Figures 11 to

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13, peripheral grooves are made in a cylindrical blank and that then a series of grooves, especially in turn wedge-shaped grooves, is made parallel to the lengthwise axis so that similar star-shaped formations arise as in Figure 14, in any case then in the region of these subsequently made grooves the initially peripheral wedge-shaped grooves having been removed and no longer being present there.

1. Mascara brush with a handle and an application part located on its front end, in the form of a central carrier from which radial projections emerge, characterized in that the outside surface of the carrier (3) and/or the projections (4) are provided with grooves (5, 6, 8) or ribs (7, 7') for retaining and apportioning the liquid or pasty coating agent.

2. Mascara brush as claimed in Claim 1, characterized in that the projections or carriers (3) which are made as thin elongated tentacles (4) are provided with peripheral cross grooves (6, 8) or ribs (7, 7').

3. Mascara brush as claimed in Claim 1 or 2, characterized in that the handle (1, 2) with the application part is extrusion-coated.

4. Mascara brush as claimed in Claim 1 or 2, characterized in that the handle (1, 2) is provided with grooves or ribs (9) which appear on the outside of a carrier made as a tubular piece (3) and pressed onto it.

5. Mascara brush as claimed in Claim 4, characterized in that the tubular piece (3) is closed on the end side.

6. Mascara brush as claimed in Claim 1, characterized in that the radial projections are preferably peripheral thin disks, preferably of plastic, which are perpendicular to the carrier axis.

7. Mascara brush as claimed in Claim 6, characterized in that the disks (106) are provided with at least one narrow radial indentation (107).

8. Mascara brush as claimed in Claim 7, characterized in that the indentations (107) are arranged offset against one another from disk (106) to disk (106), especially by 180°.

9. Mascara brush as claimed in Claim 7 or 8, characterized in that the disks (106) which border the brushes axially are made without indentations (107).

10. Mascara brush as claimed in one of Claims 6 to 9, characterized in that the diameters of the preferably round disks (106) decrease toward the two ends.

11. Mascara brush as claimed in one of Claims 6 to 10, characterized in that the central carrier (105) is integrally connected to the handle (102).

12. Mascara brush as claimed in one of Claims 6 to 10, characterized in that the central carrier (105) has a plug-type peg (108) for attachment to the front end (1010) of the handle (102).

13. Mascara brush as claimed in one of Claims 6 to 10, characterized in that the central carrier (105') is a plastic tubular piece which can be attached to the handle (102).

14. Mascara brush as claimed in one of Claims 6 to 10, characterized in that the application part (202) is an integral part of foam or soft plastic with machined, peripheral, wedge-shaped grooves (203).

15. Mascara brush as claimed in Claim 14, characterized in that /3
the wedge-shaped grooves (203) are arranged such that the disk edges (205) form narrow edges.

16. Mascara brush as claimed in Claim 14 or 15, characterized in that the wedge-shaped grooves (203) run parallel to one another (Figure 11).

17. Mascara brush as claimed in Claim 14 or 15, characterized in that the wedge-shaped grooves hang together helically (Figure 12).

18. Mascara brush as claimed in one of Claims 14 to 17, characterized in that the application part (202) has a nonround cross section.

19. Mascara brush as claimed in Claim 18, characterized in that the application part (202) is provided with grooves which are parallel to the axis of the handle.

20. Process for producing a mascara brush as claimed in one of Claims 14 to 19, characterized the handle is foam-coated in a mold.

21. Process for producing a mascara brush as claimed in one of Claims 14 to 19, characterized the wedge-shaped grooves are machine into a deep frozen blank by means of cutting tools.

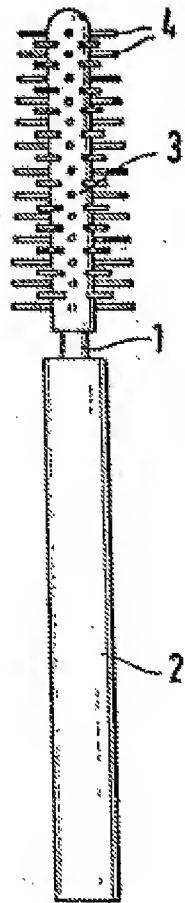


FIG. 1

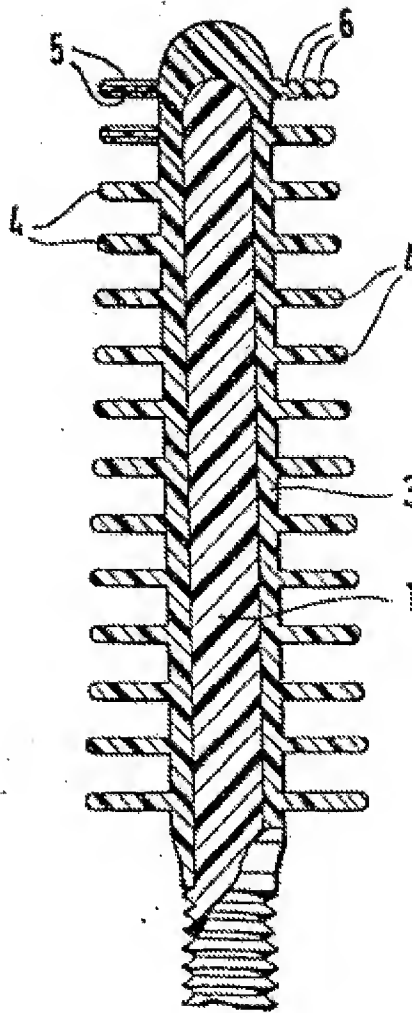


FIG. 2

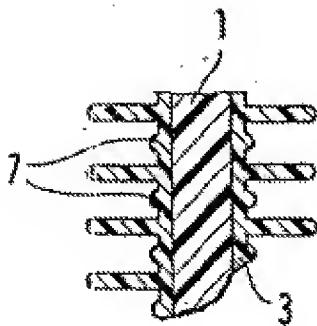


FIG. 3

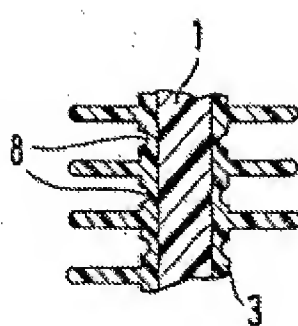


FIG. 4

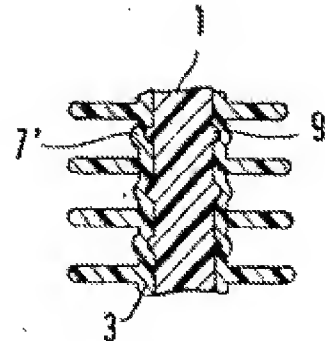


FIG. 5

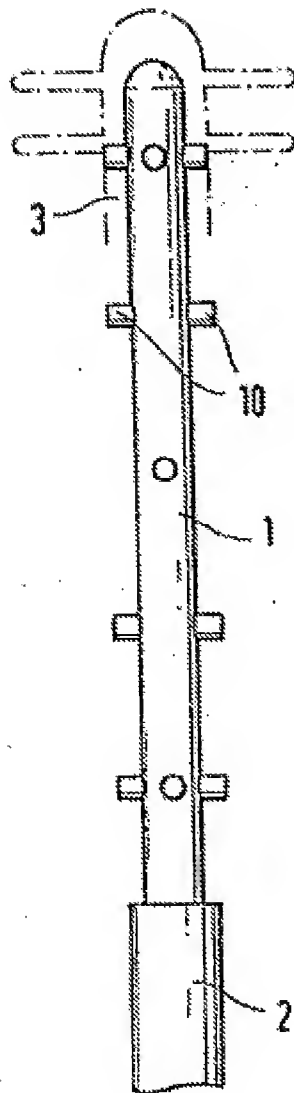


FIG. 6

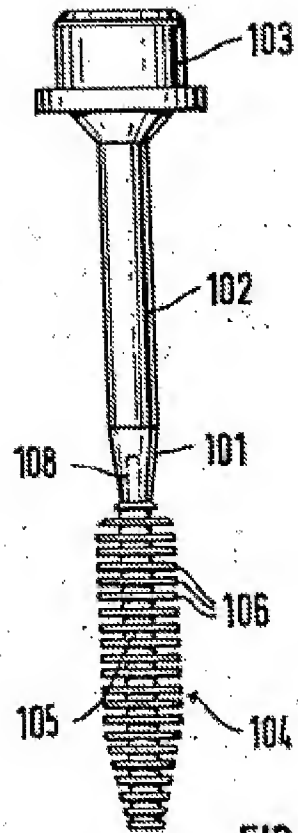


FIG. 7

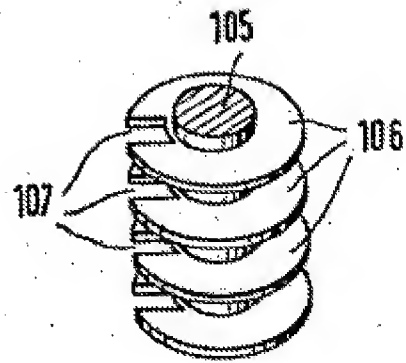


FIG. 8

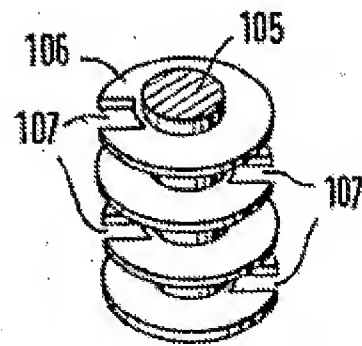


FIG. 9

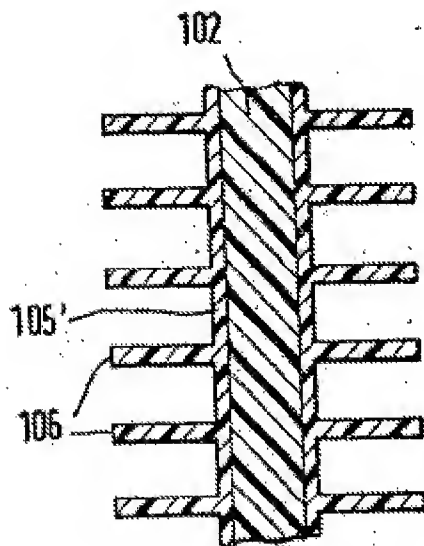


FIG. 10

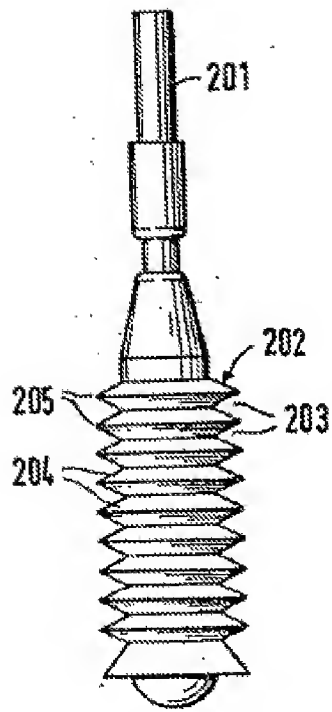


FIG. 11

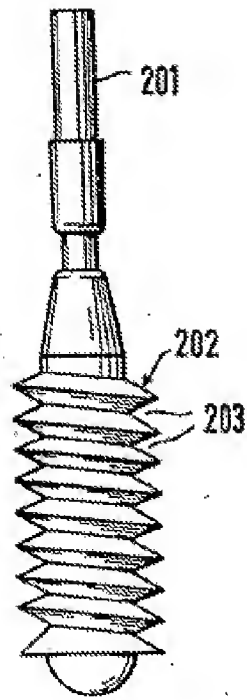


FIG. 12

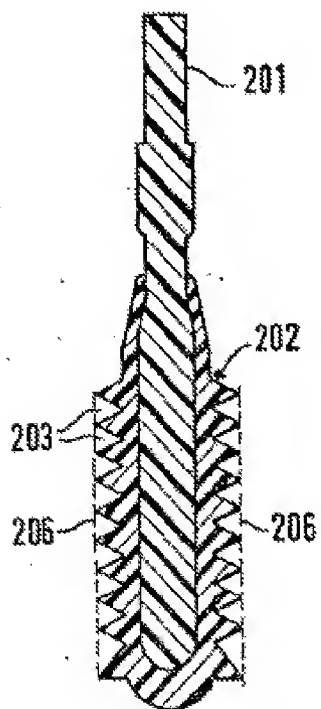


FIG. 13

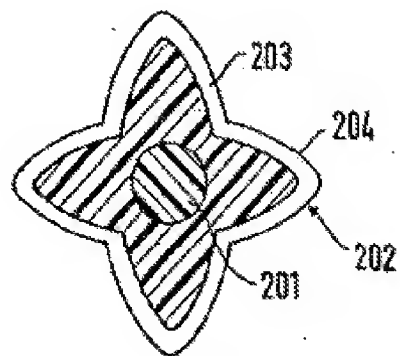


FIG. 14

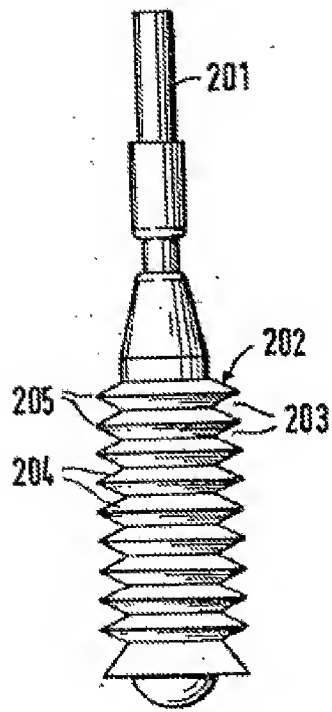


FIG. 11

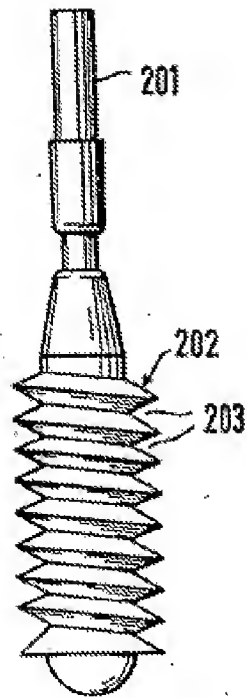


FIG. 12

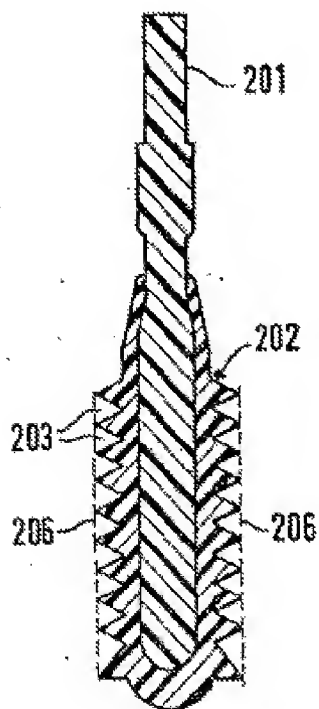


FIG. 13

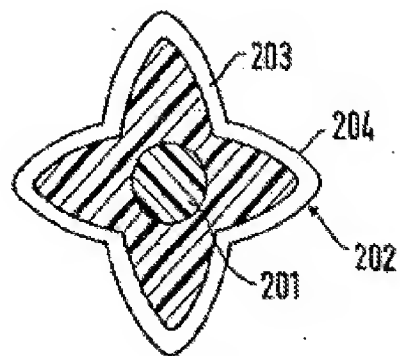


FIG. 14